ARIZONA GAME AND FISH DEPARTMENT
HABITAT PARTNERSHIP PROGRAM
HABITAT ENHANCEMENT AND WILDLIFE MANAGEMENT PROPOSAL

PROJECT INFORMATION

Project Title: Movements, Habitat Use, and Survival of Unit 12A West Mule Deer	**Project No. 10-206**
Region/GMU: 12A West	**HPC:**
Project Type: Telemetry	

Project Description:

Twenty-five store-on-board GPS collars will be placed on adult doe mule deer in Unit 12A-W to determine habitat use, seasonal movements, and responses to recent wildfires and habitat improvements on the West Side winter range. These collars will also provide ancillary information on annual survival rates to improve population modeling efforts.

Wildlife Species to Benefit: Mule Deer

Possible Funding Partners:

Implementation Schedule: **Beginning: March 2011** **Completed: December 2015**	**NEPA Compliance: (if applicable)** **Completed: Yes ____ No __X__** **Projected Completion Date:**

PROJECT FUNDING

SBG Funds Requested: $ 49,500

Cost Share Funds: $ 5,000

Total Project Costs: $ 54,500

PARTICIPANT INFORMATION

Applicant: Tom McCall, Steve Rosenstock (please print) **Telephone: (928) 214-1248, 623-236-7999**	**Address:** **3500 S. Lake Mary Rd.** **Flagstaff, AZ 86001**
AGFD Contact and Phone No. **(If applicant is not AGFD personnel)**	
Coordinated with: The project has support from Region 2 staff, as well as from the Kaibab Review Team, Arizona Deer Association, the U.S. Forest Service, and other Game Specialists.	**Date: August 30, 2010**
Applicant's signature:	**Date: August 30, 2010**

(revised 7-02-2007)

SEND COMPLETED APPLICATIONS TO:
Game Branch
AZ Game and Fish Dept.
5000 W. Carefree Highway
Phoenix, AZ 85086

WAS PROJECT PRESENTED TO THE LOCAL HPC? YES _____ NO ___X___

HAS PROJECT BEEN SUBMITTED IN PREVIOUS YEARS? IF SO WAS IT FUNDED?

No, it was not submitted in previous years.

NEED STATEMENT/PROBLEM ANALYSIS:

The Kaibab Plateau supports one of the premier deer herds in the Western United States, and has been the focus of intensive management and research for decades. In recent years, winter range on the Plateau has been impacted by large wildfires and widespread establishment of invasive exotic weeds, (e.g. cheatgrass). Their effects on deer movements and habitat use are largely unknown; the last telemetry study on the Kaibab was completed in the 1980's, prior to these extensive changes. Recently, the Department, U.S. Forest Service, and sportsman's groups have undertaken extensive efforts to improve deer habitat via removal of encroaching woodland vegetation, seeding of forage plants, herbicidal control of cheatgrass, and installation of new water developments. The responses of deer to these efforts are likewise unknown.

Location and movement data will allow the Department and U.S. Forest Service to assess efficacy of habitat improvement efforts and identify additional priority areas for future treatments. The movement data will address ongoing questions concerning deer use of transitional, winter, and critical ranges in response to winter conditions. Survivorship data obtained from these GPS collars will update the last such estimates, obtained from 1979 to 1983 (McCulloch and Brown 1986). Over their operational lifespan, these collars could also be leveraged to support other Department efforts, e.g., estimating "sightability" for aerial surveys and locating groups of deer for subsequent captures.

PROJECT OBJECTIVES:

1. **Identify seasonal movement patterns of mule deer does between summer, transitional, and winter ranges.**
2. **Assess habitat use, particularly with respect to recently burned areas, habitat treatments (juniper removal, reseeding), and newly-installed water developments.**
3. **Obtain estimates of adult female mule deer survivorship to enhance modeling efforts and population estimates.**

PROJECT STRATEGIES:

We will attach store-on-board GPS collars to adult female mule deer that will be captured in Spring 2011 or 2012, as part of the planned animal condition assessment. The GPS collars will have a 2-3-year lifespan, collecting 1-2 locations per day, and have a timed-drop off mechanism allowing recover at the end of the duty cycle. GPS collars will be equipped with a VHF beacon and mortality sensor, and timed-drop off mechanism allowing recovery at the end of the duty cycle. GPS collars are preferred over VHF collars because of their

greater accuracy in providing location data. Deer will be monitored with fixed-wing aircraft 4 times per year to ensure that collars are functioning correctly.

PROJECT LOCATION:

The project location will be the western Kaibab mule deer winter range in Unit 12A West.

LAND OWNERSHIP AT PROJECT SITE (Please state specifically if PRIVATE PROPERTY and provide landowner's name):

U.S. Forest Service's North Kaibab Ranger District and Bureau of Land Management

IF PRIVATE PROPERTY, IS THERE A STEWARDSHIP AGREEMENT BETWEEN THE LANDOWNER AND THE DEPARTMENT?

NA

HABITAT DESCRIPTION:

Pinyon-juniper and Great Basin desert-shrub/desertscrub on winter range. Ponderosa pine, quaking aspen, mixed-conifer, and spruce-fir summer range. Elevations on winter range average 5,400 feet.

ITEMIZED USE OF FUNDS:

Tag funds will be used to refurbish 25 GPS transmitters already on hand.

COST = $54,500.

LIST COOPERATORS AND DESCRIBE POTENTIAL PARTICIPATION:

U.S. Forest Service – The North Kaibab Wildlife Biologist has said that the Forest Service would be interested in contributing finances and field time to the project in the future.

Arizona Deer Association – The Deer Association has expressed interest and support for the project.

Arizona Game and Fish Department – The AZGFD would cover the cost of 4 fixed-wing flights per year, a contribution of $4,000. The AGFD would also provide an additional $1,000.

PROJECT MONITORING PLAN:

Deer location data will be combined with available GIS data layers for Unit 12A-W, then analyzed using new spatial models developed in collaboration with the Northern Arizona University Center for Ecosystem Sciences. These models predict probability of habitat use as a function of environmental/management variables, e.g., plant community type, fire history, historical and recent habitat treatments, and water developments, while accounting for spatial autocorrelation inherent in high-frequency location data obtained from GPS collars. Deer movements will also be analyzed with respect to local temperature and precipitation data, to assess the influence of these abiotic factors. Survival data will be used along with herd composition and harvest data and periodic population estimates to generate more accurate population models for use in setting hunt recommendations and guidelines.

PROJECT MAINTENANCE:

N/A

PROJECT COMPLETION REPORT TO BE FILED BY:

The project completion report will be submitted by December 2015 by Tom McCall and Steve Rosenstock.

WATER DEVELOPMENT PROJECTS (see attached worksheet):

N/A

TREE SHEARING (AGRA-AXE, PUSH) PROJECTS (see attached worksheet):

N/A

LITERATURE CITED:

McCulloch, C. Y. and R. L. Brown. 1986. Rates and causes of mortality among radio collared mule deer of the Kaibab Plateau, 1978-1983. Federal Aid in Wildl. Restor. Proj. W-78-R. AZGFD.


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